

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3909 (1986): Aluminium Unequal Leg Angles [CED 7: Structural Engineering and structural sections]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS : 3909 • 1986

Indian Standard
SPECIFICATION FOR
ALUMINIUM UNEQUAL LEG ANGLES
(*First Revision*)

UDC 669.71.423.2



© Copyright 1985

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR ALUMINIUM UNEQUAL LEG ANGLES

(First Revision)

Structural Sections Sectional Committee, SMDC 6

Chairman

SHRI M. DHAR

Representing

KEC International Ltd, Bombay

Members

SHRI V. K. AGRAWAL	Hindustan Aluminium Corporation Ltd, Renukoot
SHRI N. G. SHARMA (<i>Alternate</i>)	
SHRI R. N. AGGARWAL	Steel Authority of India Ltd (Bokaro Steel Plant), Bokaro
SHRI B. K. SRIVASTAVA (<i>Alternate</i>)	
SHRI S. BANERJEE	Steel Re-Rolling Mills Association of India, Calcutta
SHRI A. P. BHATNAGAR	Steel Authority of India Ltd (Durgapur Steel Plant), Durgapur
SHRI P. K. DEBNATH (<i>Alternate</i>)	
SHRI N. BHATTACHARYA	Garden Reach Shipbuilder & Engineers Ltd, Calcutta
SHRI B. B. CHAKRAVERTI	Superintendence Co of India (Pvt) Ltd, Calcutta
SHRI A. K. SHOME (<i>Alternate</i>)	
SHRI D. S. DESAI	M. N. Dastur & Co Pvt Ltd, Calcutta
SHRI B. K. DUTTA	Iron & Steel Control, Calcutta
SHRI S. S. SAHA (<i>Alternate</i>)	
SHRI S. K. GANGULY	Institution of Engineers (India), Calcutta
SHRI S. B. GUPTA	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
SHRI M. P. JASUJA	Steel Authority of India Ltd (Research & Develop- ment Centre for Iron & Steel), Ranchi
JOINT DIRECTOR STANDARDS (WAGON I), RDSO	Ministry of Railways
JOINT DIRECTOR STANDARDS (B & S) SB, RDSO (<i>Alternate</i>)	
SHRI A. J. JOSHI	Steel Authority of India Ltd (Bhilai Steel Plant), Bhilai
SHRI A. G. RAMA RAO (<i>Alternate</i>)	
LT-COL KULWANT SINGH	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
MAJ S. B. PURI (<i>Alternate</i>)	

(Continued on page 2)

© Copyright 1986

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI S. K. MITRA	Indian Iron & Steel Co Ltd, Burnpur
SHRI S. DUTTA (<i>Alternate</i>)	
SHRI P. K. MUKHERJEE	Braithwaite & Co Ltd, Calcutta
SHRI AMIT KUMAR BHATTACHARYA (<i>Alternate</i>)	
SHRI M. V. NAGESHAIAH	Metallurgical & Engineering Consultants (India) Ltd, Ranchi
SHRI KAMMAL PRAKASH (<i>Alternate</i>)	
SHRI P. V. NAIK	Richardson & Cruddas Ltd, Bombay
SHRI N. S. R. V. RAJU	Hindustan Shipyard Ltd, Visakhapatnam
SHRI D. KRISHNAMURTHY (<i>Alternate</i>)	
SHRI S. K. SADHU	Jessop & Co Ltd, Calcutta
SHRI S. C. CHAKRAVARTI (<i>Alternate</i>)	
SHRI M. C. SARANGDHAR	Stup & Co Ltd, Bombay
SHRI M. K. CHATTERJEE (<i>Alternate</i>)	
SHRI K. R. SENGUPTA	Joint Plant Committee, Calcutta
SHRI B. P. GHOSH (<i>Alternate</i>)	
SHRI S. N. SINGH	EMC Steelal Ltd, Calcutta
SHRI C. K. NAG (<i>Alternate</i>)	
SHRI K. S. SRINIVASAN	National Buildings Organization, New Delhi
SHRI A. K. LAL (<i>Alternate</i>)	
SHRI K. SURYANARAYANAN	Indian Aluminium Co Ltd, Calcutta
SHRI G. M. MENON (<i>Alternate</i>)	
SHRI D. THIRUVENGADAM	Tube Products of India, Madras
SHRI K. V. VIJAYARAGHAVAN (<i>Alternate</i>)	
SHRI S. G. TUDEKAR	Steel Authority of India Ltd (Rourkela Steel Plant), Rourkela
SHRI J. N. BHAMBRY (<i>Alternate</i>)	
SHRI K. RAGHAVENDRAN, Director (Struc & Met)	Director General, ISI (<i>Ex-officio Member</i>)
<i>Secretary</i>	
SHRI S. S. SETHI	
Joint Director (Struc & Met), ISI	

Panel for Structural Sections in Aluminium and Aluminium Alloys, SMDC 6 : P3

Convener

DEPUTY DIRECTOR STANDARDS, Ministry of Railways
CARRIAGE I, RDSO

Members

DEPUTY DIRECTOR STANDARDS
(B & S) SB (*Alternate* to
Deputy Director Standards,
Carriage I, RDSO)

SHRI V. D. AGGARWAL Bharat Aluminium Co, Calcutta
SHRI V. K. AGRAWAL Hindustan Aluminium Corporation Ltd, Calcutta
SHRI N. G. SHARMA (*Alternate*)

(Continued on page 9)

Indian Standard

SPECIFICATION FOR ALUMINIUM UNEQUAL LEG ANGLES (*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 24 March 1986, after the draft finalized by the Structural Sections Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Aluminium, because of its lightness, strength and better resistance to atmospheric corrosion, has gained popularity in structures especially for use in hilly areas and in defence establishments.

0.3 A large number of variety of aluminium sections are being produced in the country. In order to standardize these sections for their economic production, the Committee had formulated Indian Standard series covering angles, channels, beams and tee sections for structural use and other applications.

0.4 This Indian Standard was first formulated in 1966. In this revision alloys with new definitions as covered in IS : 733-1983* have been used apart from the addition of some more commonly used sections.

0.5 In the preparation of this standard the Committee kept in view manufacturing and trade practices followed in the country in this field.

0.6 A code of practice for use of aluminium alloys in structures, namely, IS : 8147-1976† was published which covers provisions for the design of structures (except bridges and pressure vessels) using aluminium alloys.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for wrought aluminium and aluminium alloys, bars, rods, and sections (for general engineering purposes) (*third revision*).

†Code of practice for use of aluminium alloys in structures.

‡Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the material dimensions and sectional properties of aluminium unequal leg angles for structural use and other applications.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 Y-Y Axis — A line parallel to the axis of the longer flange and passing through the centre of gravity of the profile of the section.

2.2 X-X Axis — A line passing through the centre of gravity of the profile of the section, and at right angles to the Y-Y axis.

2.3 U-U and V-V Axes — Lines passing through the centre of gravity of the profile of the section, representing the principal axis of angle sections.

3. SYMBOLS

3.1 Letter symbols used in this standard have been indicated in the figure appearing in Table 1. The letter symbols used in Table 1 shall have the meaning indicated against each as given below:

a = Sectional area;

M = Mass of the section per unit length;

I_x = Movement of inertia about the X-X axis;

I_y = Movement of inertia about the Y-Y axis;

I_u = Movement of inertia (*Max*) about the U-U axis;

I_v = Movement of inertia (*Min*) about the V-V axis;

e_x = Distance of extreme fibre from the X-X axis, (*A-C_x*);

e_y = Distance of extreme fibre from the Y-Y axis, (*B-C_y*);

$Z_x = \frac{I_x}{e_x}$ = Modulus of section about the X-X axis:

$Z_y = \frac{I_y}{e_y}$ = Modulus of section about the Y-Y axis;

$r_x = \sqrt{\frac{I_x}{a}}$ = Radius of gyration about the X-X axis;

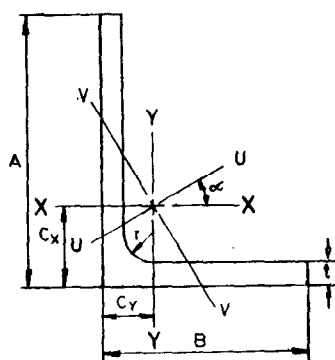
$r_y = \sqrt{\frac{I_y}{a}}$ = Radius of gyration about the Y-Y axis;

$r_u = \sqrt{\frac{I_u}{a}}$ = Radius of gyration about the U-U axis; and

$r_v = \sqrt{\frac{I_v}{a}}$ = Radius of gyration about the V-V axis.

TABLE 1 INDIAN STANDARD ALUMINIUM UNEQUAL LEG ANGLES

(Clauses 3.1, 5.1 and 5.1.1)



DESIGNATION AND SIZE (A x B x t, in mm)	MASS* PER METRE (M) kg/m	SEC- TIONAL AREA (a) cm ²	RA- DIUS AT ROOT mm	CENTRE OF GRAVITY		MOMENT OF INERTIA				RADIUS OF GYRATION				MODULUS OF SECTION		TAN α
				C _x	C _y	I _x	I _y	I _u Max	I _v Min	r _x	r _y	r _u Max	r _v Min	Z _x	Z _y	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
ALU20x10x1.5	0.12	0.46	4.0	0.69	0.23	0.18	0.03	0.20	0.02	0.63	0.26	0.65	0.21	0.14	0.04	0.26
ALU20x10x2.0	0.16	0.59	4.0	0.72	0.25	0.23	0.04	0.25	0.03	0.63	0.26	0.64	0.21	0.18	0.05	0.26
ALU20x15x1.5	0.14	0.54	4.0	0.60	0.37	0.21	0.10	0.25	0.06	0.62	0.43	0.69	0.32	0.15	0.09	0.54
ALU20x15x2.0	0.19	0.69	4.0	0.63	0.39	0.27	0.13	0.32	0.07	0.62	0.43	0.68	0.32	0.19	0.11	0.54
ALU20x15x3.0	0.27	0.99	4.0	0.67	0.43	0.37	0.17	0.45	0.10	0.61	0.42	0.67	0.31	0.28	0.16	0.54
ALU30x15x2.0	0.25	0.91	5.0	1.03	0.33	0.84	0.14	0.89	0.09	0.96	0.39	0.98	0.32	0.42	0.12	0.26
ALU30x15x3.0	0.35	1.31	5.0	1.09	0.37	1.17	0.20	1.24	0.13	0.94	0.39	0.97	0.31	0.61	0.17	0.25
ALU30x20x2.0	0.27	1.01	5.0	0.94	0.47	0.92	0.33	1.05	0.19	0.95	0.57	1.02	0.43	0.44	0.21	0.43
ALU30x20x3.0	0.40	1.46	5.0	0.99	0.51	1.29	0.46	1.48	0.27	0.94	0.56	1.01	0.43	0.64	0.31	0.43
ALU30x20x4.0	0.51	1.89	5.0	1.03	0.55	1.63	0.57	1.86	0.34	0.93	0.55	0.99	0.42	0.85	0.39	0.42
ALU40x20x2.0	0.32	1.21	5.0	1.36	0.41	2.03	0.35	2.15	0.23	1.29	0.54	1.33	0.43	0.77	0.22	0.26
ALU40x20x3.0	0.48	1.76	5.0	1.42	0.45	2.89	0.49	3.06	0.32	1.28	0.53	1.32	0.43	1.12	0.32	0.26
ALU40x20x4.0	0.62	2.29	5.0	1.46	0.49	3.67	0.62	3.89	0.41	1.27	0.52	1.30	0.42	1.45	0.41	0.25
ALU40x25x2.0	0.36	1.34	6.0	1.25	0.54	2.19	0.67	2.45	0.41	1.28	0.71	1.35	0.55	0.80	0.34	0.38
ALU40x25x3.0	0.52	1.94	6.0	1.31	0.59	3.13	0.94	3.50	0.57	1.27	0.70	1.34	0.54	1.16	0.49	0.38
ALU40x25x4.0	0.68	2.52	6.0	1.35	0.63	3.98	1.19	4.46	0.72	1.26	0.69	1.33	0.53	1.51	0.64	0.38
ALU45x30x3.0	0.60	2.24	6.0	1.43	0.70	4.56	1.65	5.25	0.96	1.43	0.86	1.53	0.66	1.49	0.72	0.44
ALU45x30x4.0	0.79	2.92	6.0	1.47	0.74	5.91	2.10	6.76	1.52	1.42	0.85	1.52	0.65	1.95	0.93	0.43
ALU45x30x5.0	0.97	3.58	6.0	1.52	0.78	7.04	2.51	8.08	1.50	1.40	0.84	1.47	0.64	2.36	1.13	0.40
ALU50x25x3.0	0.60	2.24	6.0	1.74	0.53	5.80	1.00	6.15	0.65	1.61	0.67	1.66	0.54	1.78	0.50	0.26
ALU50x25x4.0	0.79	2.92	6.0	1.79	0.57	7.43	1.26	7.87	0.82	1.60	0.66	1.64	0.53	2.31	0.65	0.26
ALU50x25x5.0	0.97	3.58	6.0	1.83	0.61	8.96	1.50	9.47	0.99	1.58	0.65	1.63	0.53	2.83	0.79	0.25
ALU50x30x3.0	0.64	2.39	6.0	1.64	0.67	6.15	1.69	6.81	1.03	1.61	0.84	1.69	0.66	1.83	0.73	0.36
ALU50x30x4.0	0.84	3.12	6.0	1.68	0.71	7.91	2.16	8.75	1.32	1.59	0.83	1.68	0.65	2.38	0.94	0.36
ALU50x30x5.0	1.03	3.83	6.0	1.73	0.75	9.55	2.58	10.54	1.59	1.58	0.82	1.66	0.64	2.92	1.15	0.35
ALU60x30x3.0	0.73	2.72	7.0	2.05	0.61	10.22	1.77	10.84	1.15	1.94	0.81	2.00	0.65	2.59	0.74	0.26
ALU60x30x4.0	0.96	3.55	7.0	2.11	0.65	13.16	2.25	13.96	1.46	1.93	0.80	1.98	0.64	3.38	0.96	0.26
ALU60x30x5.0	1.18	4.36	7.0	2.15	0.69	15.94	2.70	16.88	1.76	1.91	0.79	1.97	0.64	4.15	1.17	0.26
ALU60x40x4.0	1.07	3.95	7.0	1.93	0.94	14.48	5.20	16.66	3.02	1.92	1.15	2.05	0.88	3.54	1.70	0.44
ALU60x40x5.0	1.31	4.86	7.0	1.96	0.98	17.58	6.28	20.21	3.65	1.90	1.14	2.04	0.87	4.25	2.08	0.43
ALU60x40x6.0	1.55	5.75	7.0	2.00	1.02	20.52	7.29	23.55	4.26	1.89	1.13	2.02	0.86	5.13	2.45	0.43
ALU65x45x4.0	1.17	4.35	7.0	2.03	1.06	18.8	7.41	22.0	4.21	2.08	1.31	2.25	0.98	4.21	2.15	0.47
ALU65x45x5.0	1.45	5.36	7.0	2.08	1.10	22.78	8.99	26.7	5.07	0.06	1.30	2.23	0.97	5.15	2.64	0.47
ALU75x50x5.0	1.66	6.14	8.0	2.39	1.17	35.47	12.77	40.67	5.57	2.40	1.44	2.57	1.11	6.94	3.33	0.43
ALU75x50x6.0	1.97	7.28	8.0	2.44	1.21	41.42	14.91	47.54	8.79	2.39	1.43	2.56	1.10	18.19	3.93	0.43
ALU80x40x4.0	1.29	4.78	8.0	2.76	0.81	32.10	5.58	34.07	3.61	2.59	1.08	2.67	0.87	6.12	1.75	0.26
ALU80x40x6.0	1.88	6.98	8.0	2.85	0.89	45.87	7.84	48.62	5.09	2.56	1.06	2.64	0.85	8.91	2.52	0.26
ALU80x40x8.0	2.46	9.10	8.0	2.94	0.97	58.51	9.84	61.86	6.49	2.54	1.04	2.61	0.84	11.57	3.25	0.25
ALU80x60x4.0	1.51	5.58	8.0	2.39	1.41	36.59	17.86	44.76	9.68	2.56	1.79	2.83	1.32	6.52	3.89	0.55
ALU80x60x6.0	2.21	8.18	8.0	2.43	1.50	52.59	25.50	64.31	13.78	2.54	1.77	2.80	1.30	9.53	5.66	0.55
ALU80x60x8.0	2.89	10.70	8.0	2.56	1.57	67.38	32.46	82.20	17.64	2.51	1.74	2.77	1.28	12.37	7.33	0.55
ALU90x60x6.0	2.37	8.78	8.0	2.89	1.41	72.93	26.42	83.96	15.39	2.88	1.73	3.09	1.32	11.94	5.76	0.44
ALU100x50x6.0	2.38	8.81	9.0	3.51	1.06	91.88	15.91	97.53	10.27	3.23	1.34	3.33	1.08	14.16	4.04	0.26
ALU100x50x8.0	3.11	11.53	9.0	3.60	1.14	118.11	20.16	125.16	13.11	3.20	1.32	3.29	1.07	18.45	5.22	0.26
ALU100x50x10.0	3.83	14.17	9.0	3.68	1.21	142.61	24.03	150.80	15.83	3.17	1.30	3.26	1.06	22.58	6.35	0.25
ALU100x80x6.0	2.87	10.61	9.0	2.97	1.98	107.33	61.52	137.22	31.63	3.18	2.41	3.60	1.73	15.26	10.22	0.13
ALU100x80x8.0	3.76	13.93	9.0	3.05	2.06	139.58	79.09	176.97	40.70	3.15	2.38	3.56	1.71	19.94	13.32	0.13
ALU100x80x10.0	4.64	17.17	9.0	3.13	2.14	167.96	96.46	214.01	49.41	3.13	2.36	3.53	1.70	24.44	16.28	0.12
ALU120x80x8.0	4.21	15.57	10.0	3.86	1.89	230.16	83.17	265.44	47.89	3.84	2.31	4.13	1.75	28.28	13.61	0.11
ALU120x80x10.0	5.19	19.21	10.0	3.94	1.97	279.93	100.45	322.29	58.09	3.82	2.29	4.10	1.74	34.74	16.64	0.11
ALU120x80x12.0	6.15	22.77	10.0	4.02	2.04	327.13	116.60	375.79	67.94	3.79	2.26	4.06	1.73	41.00	19.57	0.11
ALU125x80x8.0	4.31	15.97	10.0	4.07	1.85	257.62	84.05	292.35	49.32	4.02	2.29	4.28	1.76	30.56	13.67	0.11
ALU125x80x10.0	5.32	19.71	10.0	4.15	1.93	313.57	101.54	355.28	59.83	3.99	2.27	4.25	1.74	37.57	16.72	0.11
ALU125x80x12.0	6.31	23.37	10.0	4.23	2.00	365.72	117.88	414.63	69.98	3.96	2.25	4.22	1.73	44.36	19.66	0.10
ALU150x80x8.0	4.88	18.07	12.0	5.13	1.69	426.69	87.93	459.21	55.41	4.86	2.21	5.04	1.75	43.22	13.93	0.30
ALU150x80x10.0	6.02	22.31	12.0	5.22	1.77	520.60	106.29	559.73	67.16	4.83	2.18	5.09	1.74	53.22	17.05	0.29
ALU150x80x12.0	7.15	26.47	12.0	5.30	1.84	610.41	123.50	655.43	78.48	4.80	2.16	4.98	1.72	62.94	20.06	0.29
ALU200x100x10.0	7.98	29.55	16.0	6.95	2.04	1245.12	217.90	1322.87	140.15	6.49	2.72	6.69	2.18	95.38	27.37	0.27
ALU200x100x12.0	9.48	35.11	16.0	7.04	2.12	1466.07	254.59	1556.66	163.99	6.46	2.69	6.66	2.16	113.13	32.30	0.26
ALU200x100x16.0	12.42	45.99	16.0	7.22	2.28	1886.05	322.58	1999.02	209.61	6.40	2.65	6.59	2.13	147.52	41.76	0.26
ALU200x150x12.0	11.10	41.11	16.0	6.10	3.63	1679.35	819.32	2059.03	439.65	6.39	4.46	7.08	3.27	120.82	72.09	0.55
ALU200x150x16.0	14.58	53.99	16.0	6.26	3.79	2168.22	1051.71	2653.96	565.97	6.34	4.41	7.01	3.24	157.86	93.82	0.55
ALU200x150x20.0	18.05	66.86	20.0	6.40	3.94	2632.10	1267.91	3210.76	689.24	6.27	4.35	6.93	3.21	193.58	114.59	0.55

*Based on density of 2.7 gm/cm³.

As in the Original Standard, this Page is Intentionally Left Blank

4. DESIGNATION

4.1 Aluminium unequal leg angle sections shall be designated as ALU followed by lengths of the longer and shorter legs and thickness of the section in mm.

For example ALU 80 × 60 × 6.

5. DIMENSIONS AND SECTIONAL PROPERTIES

5.1 Dimensions and mass of Indian Standard aluminium unequal leg angles shall be as given in Table 1. For convenience of reference sectional properties are also given in Table 1.

5.1.1 Section of dimensions other than those included in Table 1 may also be manufactured subject to the agreement between the purchaser and the manufacturer.

5.1.2 Sections without root radius (square fillet) may also be manufactured subject to the agreement between the purchaser and the manufacturer.

Dimensional tolerances for the sections shall be as specified in 3965-1981*.

6. MATERIAL

6.1 Aluminium sections covered in this standard shall be manufactured from the following alloys in appropriate temper : 19000, 24345, 24534, 52000, 53000, 543000, 63400, 64423, 64430, 65032, and 74530.

6.1.1 Aluminium alloys and temper selected shall conform to the provisions of IS : 733-1983†.

7. PACKING

7.1 Unequal leg angle sections shall be securely bundled and wrapped in bituminised hessian cloth or in wooden boxes or as mutually agreed. Weight of each bundle may be as agreed to between the purchaser and the manufacturer.

8. MARKING

8.1 Each lot/bundle of aluminium unequal leg angles shall be clearly marked with designation, alloy and temper, manufacturer's name and lot number/year of manufacture.

*Dimensions for wrought aluminium and aluminium alloys, bars, rods and section (first revision).

†Specification for wrought aluminium and aluminium alloy, bars, rods and sections (for general engineering purposes) (third revision).

8.2 Unequal leg angles may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

(Continued from page 2)

*Members**Representing*

SHRI D. K. BARAI
SHRI B. S. BRAHMACHARI

Cochin Shipyard Ltd, Cochin
Metallurgical & Engineering Consultants (India)
Ltd, Ranchi

SHRI A. S. LAKRA
SHRI A. V. KELKAR

Delhi Transport Corporation, Delhi
Maharashtra State Road Transport Corporation,
Pune

SHRI B. Y. DESHPANDE (*Alternate*)
SHRI K. B. PATEL

Gujarat State Road Transport Corporation,
Ahmadabad

SHRI D. K. NIMAVAT (*Alternate*)
SHRI K. PURKAYASTHA

Indian Aluminium Co Ltd, Calcutta

SHRI V. RAMASWAMY (*Alternate*)

SHRI K. R. RAGHUNATH

Jindal Aluminium Ltd, Bangalore

REPRESENTATIVE

Integral Coach Factory, Perambur

REPRESENTATIVE

Hindustan Shipyard Ltd, Visakhapatnam

REPRESENTATIVE

Garden Reach Shipbuilder & Engineers Ltd,
Calcutta

SHRI K. K. SUD

Ministry of Defence (R & D)

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²



INDIAN STANDARDS INSTITUTION

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 331 0131 331 1375

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:

Telephone

*Western : Manakalaya, E9 MIDC, Marol Andheri (East) 6 32 92 95
BOMBAY 400093

†Eastern : 1/14 C. I. T. Scheme VII M. V. I. P. Road, 36 24 99
Maniktola, CALCUTTA 700054

Northern : SCO 445-446, Sector 35-C { 2 18 43
CHANDIGARH 160036 { 3 16 41

Southern : C. I. T. Campus, MADRAS 600113 { 41 24 42
{ 41 25 19
{ 41 29 16

Branch Offices:

Pushpak, Nurmohamed Shaikli Marg, Khanpur { 2 63 48
AHMADABAD 380001 { 2 63 49

F Block, Unity Bldg, Narasimharaja Square, 22 48 05
BANGALORE 560002

Gangotri Complex, 5th Floor, Bhadbhada Road, 6 67 16
T. T. Nagar, BHOPAL 462003

Plot No. 82/83, Lewis Road, BHUBANESHWAR 751002 5 36 27

53/5 Ward No 29, R. G. Barua Road, 5th Byelane, —
GUWAHATI 781003

5-8-56C L. N. Gupta Marg, HYDERABAD 500001 22 10 83

R14 Yudhisther Marg C Scheme, JAIPUR 302005 { 6 34 71
{ 6 98 32

117/418 B Sarvodaya Nagar, KANPUR 208005 { 21 68 76
{ 21 82 92

Patliputra Industrial Estate, PATNA 800013 6 23 05

Hantex Bldg (2nd Floor), Rly Station Road, 52 27
TRIVANDRUM 695001

Inspection Office (With Sale Point):

Institution of Engineers (India) Building, 1332 Shivaji Nagar, 5 24 35
PUNE 411005

*Sales Office in Bombay is at Novelty Chambers, Grant Road, 89 65 28
BOMBAY 400007

†Sales Office in Calcutta is at 5 Chowringhee Approach, 27 68 00
P.O. Princep Street, CALCUTTA 700072